

4.3: Data and Analysis

Data Collection

(Acquiring competencies) Following your detailed protocol based on the videos, perform all the experiments. Record your observations and take pictures of your key steps in the process. Your observations and images need to be incorporated in your data section and this section should be as detailed as possible as you will use this information to complete your discussion.

Light Source	Photo/Drawing/Description of the spectrum	Wavelength range of the spectrum
Sun		400-800 nm

Data Processing

- (Representation) Identify 3 elements that are used to give color to sparklers and write their electron configurations in the following formats:
 - Full electron configuration by filling order:
 - Full electron configuration by *spdf* notation:
 - Noble gas electron configuration by filling order:
 - Noble gas electron configuration by *spdf* notation:
- (Manipulation) The strongest emission line for helium is at 420 nm. Write the formula for determining the frequency of this light and show your stepwise calculations with the correct units.
- (Manipulation) The strongest emission line for helium is at 420 nm. Write the formula for determining the energy of this light and show your stepwise calculations with the correct units.
- (Existing knowledge, research, and views) Describe why some spectra have the full range of colors while some only give a few colored lines.
- (Assumptions and Analysis) Fill in the following table using the observations and data from your experiments.

Assumptions made	Testing the assumption	If assumptions are wrong ...
The distilled water is pure	Evaporate it and check for residue	The density would change depending on the density of the contaminant
When we look into the spectrophotometer we only see the light we are aiming at.	Look at the same light source during the day and during the night.	

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